AMENDMENTS TO THE CLAIMS

Applicants have submitted a new complete claim set showing marked up claims with insertions indicated by underlining and deletions indicated by double bracketing.

1.   (Original) A fractal generation process, including:

(i) randomly selecting images from a set of input images;

(ii) selecting transformation functions from a set of transformation functions;

(iii) generating transformed images by applying the selected transformation functions to the selected images;

(iv) generating an output image by combining the transformed images;

(v) repeating steps (i) to (iv) to generate a set of output images; and

(vi) repeating steps (i) to (v) using said set of output images as said set of input images to generate a new set of output images.

2.   (Original) A fractal generation process as claimed in claim 1, wherein said output images represent respective fractals.

3.   (Original) A fractal generation process as claimed in claim 2, including repeating step (vi) until said new set of output images is substantially independent of the first set of input images used in the process.

4.   (Original) A fractal generation process as claimed in claim 1, wherein the number of selected transformation functions is less than the number of transformation functions in said set of transformation functions.

5.   (Original) A fractal generation process as claimed in claim 1, wherein the step of selecting transformation functions includes selecting an iterated function system from a set of iterated function systems, each iterated function system including a set of transformation functions.

6.   (Original) A fractal generation process as claimed in claim 5, wherein the selection of an iterated function system is based on selection probabilities associated with said iterated function systems.

7.   (Original) A fractal generation process as claimed in claim 1, wherein the combining of said transformed images includes superimposing said transformed images.

8.   (Original) A fractal generation process as claimed in claim 1, wherein said transformation functions include geometrical transformations.

9.   (Original) A fractal generation process as claimed in claim 8, wherein said geometrical transformations include scaling and translation.

10.   (Original) A fractal generation process as claimed in claim 8, wherein said geometrical transformations include scaling, translation and geometrical distortion.

11.   (Original) A fractal generation process as claimed in claim 1, wherein said geometrical transformations are contractive transformations.

12.   (Original) A fractal generation process as claimed in claim 1, wherein said transformation functions include projective transformations.

13.   (Original) A fractal generation process as claimed in claim 1, wherein said transformation functions include transformations of at least one of brightness and colour.

14.   (Original) A fractal generation process as claimed in claim 1, wherein each of said transformation functions is represented by one or more parameters.

15.   (Original) A fractal generation process as claimed in claim 6, including generating said transformation functions and said selection probabilities.

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16.   (Original) A fractal generation process as claimed in claim 15, wherein said transformation functions and said selection probabilities are generated on the basis of one or more predetermined probability distributions.

17.   (Original) A fractal generation process as claimed in claim 1, including generating said set of input images.

18.   (Original) A fractal generation process, including randomly selecting from a set of input images, transforming the selected images, and combining the transformed images to generate a set of output images, and iterative repetition of these steps using the set of output images of each iteration as the set of input images for the next iteration.

19.   (Original) A fractal generation process as claimed in claim 18, wherein said selecting includes selecting the same input image more than once.

20.   (Original) A fractal generation process as claimed in claim 18, wherein said transforming includes scaling and translating the selected images.

21.   (Original) A fractal generation process as claimed in claim 20, wherein said transforming also includes geometrically distorting the selected images.

22.   (Original) A fractal generation process as claimed in claim 18, wherein the transforming is contractive.

23.   (Original) A fractal generation process, including:
(i)   randomly selecting images from a set of input images;
(ii)   transforming the selected images; and
(iii)   combining the transformed images to generate a set of output images;
wherein steps (i) to (iii) are repeated iteratively using the set of output images of each iteration as the set of input images for the next iteration, each output image providing a new fractal.

24.   (Previously presented) A system having components for executing the steps of claim 1.

25.   (Previously presented) A computer readable storage medium having stored thereon program instructions for executing the steps of claim 1.

26.   (Previously presented) Image data generated by a process as claimed in claim 1.

27.   (Original) Image data as claimed in claim 26, wherein said image data represents one or more V-variable fractals.

28.   (Original) A fractal generator, including:

an image selector for selecting M images from V input images;

a function selector for selecting a set of M transformation functions;

at least one image transformer for respectively applying the selected transformation functions to the selected input images; and

a compositor for composing an output image from the images output by said at least one image transformer;

wherein the fractal generator is configured to iteratively generate sets of V output images using the set of V output images of each iteration as the set of V input images for the next iteration.

29.   (Original) A fractal generator as claimed in claim 27, wherein said function selector is adapted to select said set of M transformation functions from N sets of transformation functions.

30.   (Original) A fractal generation system, including an image selector for selecting images from a set of input images, and an image transformer for transforming the selected images to generate a set of output images, said system being adapted to provide said set of output images as the set of input images to iteratively generate fractal image data.

31.   (Original) A fractal generation system as claimed in claim 30, wherein said image transformer includes one or more image transformation modules for transforming said selected images, and an image combination module for combining the transformed images.

32.   (Original) A fractal generation system as claimed in claim 31, wherein said one or more image transformation modules are adapted to scale and translate said selected images.

33.   (Original) A fractal generation system as claimed in claim 32, wherein said one or more image transformation modules are adapted to geometrically distort said selected images.

34.   (Original) A fractal generation system as claimed in claim 30, including a transformation selection module to select transformations to be applied to the selected images from a set of transformations.

35.   (Original) A fractal generation system as claimed in claim 34, wherein said transformation selection module is adapted to select transformations based on selection probabilities associated with said set of transformations.

36.   (Original) Fractal image data representing a combination of two or more constituent first images, each of said first images representing a random transformed combination of two or more constituent second images, each of said second images representing a random transformed combination of two or more constituent third images, each of said third images representing a random transformed combination of two or more constituent fourth images, wherein each transformation includes at least one of translation and rotation.

37.   (Original) Fractal image data as claimed in claim 36, wherein each transformation is a projective transformation, such as an affine transformation.

38.   (Original) Fractal image data as claimed in claim 37, wherein each transformation includes contractive scaling.

39.   (Original) Fractal image data as claimed in claim 37, wherein the transformations are contractive on average.

40.   (Original) Fractal image data as claimed in claim 36, wherein each combination is a superposition.

41.   (Currently amended) Image data representing a variable number n of constituent images randomly selected from a set of V images and iteratively transformed and combined in a random manner to generate said image data, with $V > 1$ and $1 < n$ [[□]] $\leq V$.

42.   (Original) Image data as claimed in claim 41, wherein the constituent images are transformed using projective transformations at each iteration.

43.   (Original) A V-variable fractal.

44.   (Original) A V-variable fractal as claimed in claim 43, wherein said V-variable fractal is represented by fractal image data, where V is an integer greater than one and represents the number of constituent images available for iterative combination to generate the fractal.

45.   (Original) Image data decomposable into at least four successive levels, wherein each level is composed of smaller data sets which are affine transformations of V basic sets.

46.   (Original) Image data as claimed in claim 45, wherein the basic sets vary from level to level.

47.   (Original) Image data as claimed in claim 45, wherein the transformations are contractive.

48.   (Previously presented) Image data as claimed in claim 45, wherein each of said data sets comprises a set of $V>1$ images.

49.   (Original) Image data representing iterative transformation and combination of at least two images selected from a set of $V > 1$ input images, wherein image data generated at each iteration represents a combination of at least two smaller images, wherein each of said at least two smaller images represents an affine or projective transformation of image data generated at the previous iteration.

50.   (Original) Image data representing a V-variable fractal, wherein V is an integer greater than one that determines the maximum number of basic images that can be generated by:

(i)   selecting constituent images of said image data;

(ii)   applying one or more projective transformations to each of the constituent images to provide basic images;

(iii)   selecting constituent images of the basic images; and

(iv)   iteratively repeating steps (ii) and (iii) to provide a set of basic images from which said image data can be generated by iterative random selection, transformation and combination; wherein one or more first basic images that can be generated by affine transformation of a second basic image are considered to provide one basic image.

51.   (Original) Image data decomposable into a set of basic images by:

(i)   selecting constituent images of said image data;

(ii)   applying one or more projective transformations to each of the constituent images to provide basic images;

(iii)   selecting constituent images of the basic images; and

(iv)   iteratively repeating steps (ii) and (iii) to provide said set of basic images from which said image data can be generated by iterative random selection, transformation and combination.

52.   (Original) Image data as claimed in claim 51, wherein at least four iterations are performed.

53.   (Original) Image data as claimed in claim 51, wherein the one or more projective transformations are selected to provide the minimum number of basic images.